REMARKS/ARGUMENTS

I. Introduction:

The undersigned would like to thank the Examiner for his time during our telephone discussion on August 23, 2005 regarding the present patent application. As discussed, an amendment is submitted herewith along with a Request for Continued Examination. An interview with the Examiner is respectfully requested prior to the Examiner issuing a new Office Action.

Claims 1, 15, 19, and 20 are amended herein. Claims 13, 14, 18, 31, and 34 have previously been canceled herein. Claims 1-12, 15-17, 19-30, 32, 33, and 35-37 are currently pending.

II. Claim Rejections Under 35 U.S.C. 103:

Claims 1-4, 6, 8-12, 15, 16, 19, 20, 22, 25, 32, and 33 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,265,092 (Soloway et al.) in view of U.S. Patent No. 6,456,599 (Elliott).

Applicant respectfully submits that the above claims are nonobvious in view of Soloway et al. and Elliott.

Claim 1 has been amended to clarify that existing routes of a node are evaluated before recalculating and modifying routes to determine if said new route information improves at least one of the existing routes or at least one of the existing routes is made worse or lost. Claim 1 has also been amended to specify that recalculating routes comprises modifying information about links within the network without examining each of the nodes within the network.

The Soloway et al. patent is directed to a synchronization mechanism for link state packet routing. A system and method for providing loop free and shortest path routing of data packets are disclosed. The routing of data packets is achieved through modifications to conventional link state packet (LSP) routing protocols and permits

each switch to inform adjacent switches in the network of information in the switch's database used to compute forwarding tables. A switch uses a received LSP to compute a forwarding table and informs neighboring switches on attached links of the routing change. The switches compute shortest paths from each attached channel's link to all end nodes and use the results of these calculations to construct their forwarding tables.

Soloway et al. do not disclose recalculating routes and modifying a routing table for a node only when new route information improves at least one of the existing routes or at least one of the existing routes is made worse or lost. The system of Soloway et al. uses a received LSP to compute a forwarding table (routing table). The shortest path is found by performing a shortest path calculation and creating a new forwarding table once the LSP is received with new routing information. In rejecting claim 19 the Examiner refers to col. 3, line 13-24 and col. 4, lines 19-65. Col. 3 discusses how the system achieves loop-free routing of data packets through modifications to conventional LSP routing protocols. When a switch first uses a received LSP to compute a forwarding table it discards any data packet that the switch receives whose path would be affected by the new routing information. The switch continues to discard the affected data packets until the switch receives notification from each adjacent switch affected by the new routing information that all affected routing paths have been re-calculated and the forwarding tables have been updated. Thus, the switch discards certain packets after receiving an LSP with new route information to maintain loop-free data packet routing until all of the forwarding tables have been updated. Col. 4 discusses how the protocol assures that no two switches on the same link having different switch lists will consider the link up and that the routing logic will not receive and process a packet sent by a switch before a link state changes from up to down.

As noted by the Examiner, Soloway et al. do not disclose determining if new route information improves at least one of the existing routes or at least one of the existing routes is made worse or lost, initializing a best cost, calculating a neighbor cost of reaching another node via the neighbor node, or setting the best cost to the neighbor cost if the neighbor cost is less than the best cost, as required by claims 1, 15, 19, and 20. With respect to these limitations, the Examiner cites Elliot.

Elliot discloses distribution of potential neighbor information through an ad hoc network. Information of potential neighboring nodes to which a node could possibly be connected is generated in a node in response to network information received from other nodes of the network. Elliott is concerned with distributing some or all of the potential neighbor information so that nodes in a network can perform globally optimal selections of actual neighbors from potential neighbor sets. A radio-based network is described which has a cluster head that periodically broadcasts a beacon message to establish the station's presence. Beacon messages are sent by nodes as a means of discovering potential neighbor nodes. Elliott simply discloses using a classic-link state method in replacing older updates via new ones and computing best-path trees between nodes with full neighbor relationships if potential neighbor relationships are upgraded to actual neighbor relationships.

The Examiner refers to cols. 9 and 10 of the Elliott patent as showing determining if new route information improves at least one of the existing routes or at least one of the existing routes is made worse or lost. This section of the patent discusses how a node evaluates various potential node configurations to optimize a network after receiving potential neighbor information. During the evaluation, the node determines whether potential neighbors should be changed to an actual neighbor. Elliott does not show or suggest determining if new route information improves at least one of the existing routes or at least one of the existing routes is made worse or lost. In contrast, Elliott evaluates changing potential neighbors to actual neighbors and the impact on the overall network rather than evaluating specific routes.

Moreover, neither Soloway et al. nor Elliott, either alone or in combination, show or suggest evaluating existing routes of a node before recalculating and modifying routes to determine if new route information improves an existing route or wherein recalculating routes comprises modifying information about links within the network without examining each of the nodes within the network, as specified in amended claim 1.

Accordingly, claims 1, 15, 19, and 20 are submitted as patentable over Soloway et al. and Elliott.

Claims 2-12, 29-33, and 35-37 depending from claim 1, claims 16-17, depending from claim 15, and claim 21, depending from claim 20, are submitted as patentable for the same reasons as claims 1, 15, 19, and 20.

Claim 36 is further submitted as patentable over Soloway et al. and Elliott which do not show or suggest applying an incremental Dijkstra's algorithm to the root node only if the new route information improves or worsens at least one of the existing routes or at least one of the existing routes is lost. As previously discussed, Soloway et al. create a new forwarding table when new route information is received and the table is constructed using a conventional Dijkstra's algorithm. In contrast, applicant's invention, as set forth in claim 36, uses an incremental Dijkstra's algorithm applied to the root node only if new route information improves or worsens at least one of the existing routes or at least one of the existing routes is lost. The conventional implementation of the Dijkstra algorithm requires that every node in the network be examined for every network topology change. Applicant's invention is particularly advantageous in that the number of nodes to be examined is reduced so that the computation required is only a fraction of the conventional implementation.

Claims 1-4, 6, 8-12, 15, 16, 19, 20, 22, 25, 32, and 33 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Soloway et al. in view of U.S. Patent No. 5,838,660 (Croslin).

As discussed above, Soloway et al. do not disclose recalculating routes and modifying a routing table for a node only when new route information improves at least one of the existing routes or at least one of the existing routes is made worse or lost. Furthermore, as noted by the Examiner, Soloway et al. do not disclose determining if new route information improves at least one of the existing routes or at least one of the existing routes is made worse or lost, initializing a best cost, calculating a neighbor cost of reaching another node via the neighbor node, or setting the best cost to the neighbor

cost if the neighbor cost is less than the best cost, as required by claims 1, 15, 19, and 20.

As noted by the Examiner, Soloway et al. do not disclose determining if new route information improves at least one of the existing routes or at least one of the existing routes is made worse or lost, initializing a best cost, calculating a neighbor cost of reaching another node via the neighbor node, or setting the best cost to the neighbor cost if the neighbor cost is less than the best cost, as required by claims 1, 15, 19, and 20.

The Croslin patent is directed to a dynamic restoration process. As noted in the Background of the Invention, Croslin believes that it is critical that a reconstruction of topology and costing data not be required during route generation process. The routing process utilizes node source/target sets and route intersection sets to reduce route generation time. The process shown in Fig. 6a is used to minimize non-viable routes The Examiner refers to Fig. 6a as showing the steps of determining if new route information improves at least one of the existing routes or at least one of the existing routes is made worse or lost. However, these steps are not shown or suggested in Fig. 6a. Instead, the process shown in Fig. 6a and described at col. 10, lines 43-63 includes: determining if a node exists in a common route (step 606); determining accumulated costs for a new route (step 610); comparing accumulated cost to a pre-established cost threshold of acceptability (step 612); and determining if the accumulated cost exceeds the best current route cost. The method of Croslin does not include determining if one of the existing routes is made worse or lost. Instead Croslin checks to see if accumulated cost exceeds a preestablished limit or exceeds the best current route. Croslin does not check to see if existing routes are made worse or lost.

Accordingly, claims 1, 15, 19, and 20 are submitted as patentable over Soloway et al. and Croslin.

Claims 2-12, 29-33, and 35-37 depending from claim 1, claims 16-17, depending from claim 15, and claim 21, depending from claim 20, are submitted as patentable for the same reasons as claims 1, 15, 19, and 20.

Claim 22 is directed to a method for performing route calculations in a link state routing protocol at a root node within a computer network and is submitted as patentable for the reasons discussed above with respect to claims 1, 15, 19, and 20. Furthermore, none of the references cited show or suggest reattaching routes at lowest cost point in a spanning tree and re-evaluating routes from reattached nodes, as set forth in claim 22. The Examiner cites Soloway et al. as showing reattaching routes at lowest cost point in a spanning tree, however, Soloway et al. do not reattach routes. Instead, Soloway et al. simply update a forwarding table without reattaching routes.

Claims 23-28, depending either directly or indirectly from claim 1, are submitted as allowable for at least the reason of their dependence from the allowable independent claim.

The additional references cited including U.S. Patent Nos. 5,430,727 (Callon) and 5,649,108 (Spiegel), do not remedy the deficiencies of the primary reference.

IV. Conclusion:

For the foregoing reasons, Applicant believes that all of the pending claims are in condition for allowance and should be passed to issue. If the Examiner feels that a telephone conference would in any way expedite the prosecution of the application, please do not hesitate to call the undersigned at (408) 399-5608.

Respectfully submitted,

Cindy S. Kaplan
Reg. No. 40,043

P.O. Box 2448
Saratoga, CA 95070
Tel: 408-399-5608
Fax: 408-399-5609